

Hamline University DigitalCommons@Hamline

School of Education Student Capstone Theses and
Dissertations

School of Education

Spring 2017

Applied Behavioral Analysis Therapy And Social Interactions Within Families And Their Child With Autism

Christina Latterner
Hamline University

Follow this and additional works at: https://digitalcommons.hamline.edu/hse_all



Part of the [Special Education and Teaching Commons](#)

Recommended Citation

Latterner, Christina, "Applied Behavioral Analysis Therapy And Social Interactions Within Families And Their Child With Autism" (2017). *School of Education Student Capstone Theses and Dissertations*. 4292.
https://digitalcommons.hamline.edu/hse_all/4292

This Thesis is brought to you for free and open access by the School of Education at DigitalCommons@Hamline. It has been accepted for inclusion in School of Education Student Capstone Theses and Dissertations by an authorized administrator of DigitalCommons@Hamline. For more information, please contact digitalcommons@hamline.edu, lterveer01@hamline.edu.

APPLIED BEHAVIORAL ANALYSIS THERAPY AND SOCIAL INTERACTIONS
WITHIN FAMILIES AND THEIR CHILD WITH AUTISM

by

Christina Latterner

A capstone submitted in partial fulfillment of the requirements for the degree of Master
of Education

Hamline University

Saint Paul, Minnesota

May 2017

Primary Advisor: William D. Keilty
Secondary Advisor: Kim Latterner
Peer Reviewer: Sally Blum

ACKNOWLEDGMENTS

Thank you to my capstone committee and their time with aiding me in this process. A very special thank you to the family who participated in the study: your openness and willingness has helped tremendously in this study.

TABLE OF CONTENTS:

CHAPTER ONE: Introduction.....	7
First experiences with autism.....	7
Applied Behavioral Analysis.....	9
ABA therapy and the family.....	11
Summary.....	12
CHAPTER TWO: Literature Review.....	13
Introduction.....	13
Autism.....	13
Applied Behavioral Analysis.....	18
Parents and Autism.....	25
Summary.....	30
CHAPTER THREE: Methods.....	33
Introduction.....	33
Setting and participants.....	33
Methods.....	37
Data analysis.....	39
Summary.....	39
CHAPTER FOUR: Results.....	41
Quantitative Method: data collection.....	42
Qualitative Method: interview.....	45
Interview analysis and comparisons: prior to therapy.....	48

Interview analysis and comparisons: after one year of therapy.....	49
Conclusion of data analysis.....	52
CHAPTER FIVE: Conclusions.....	55
The research journey.....	55
Main ideas: past and current studies.....	57
Future studies.....	60
Conclusion.....	61

LIST OF TABLES

Table A- Challenging Behavior Graph.....	65
Table B-Parent Hours Worked per Month.....	66
Table C- Challenging Behaviors and Parent Hours per Month.....	67

LIST OF FIGURES

Figure 1 Challenging behavior data collection graph.....68

Figure 2 Interview questions.....69

CHAPTER ONE

Introduction

The first chapter of my capstone research project will focus on my research question, *in what ways does ABA therapy impact the social interactions between the parents and their child with autism?* Throughout this chapter, I will reflect on my past experiences with my career and education, which will take you on my journey on how I became a senior behavioral therapist working with autistic children. Being dually licensed as an early childhood teacher and an early childhood special education teacher have provided many opportunities to work with special needs children in the classroom setting and more recently in the child's natural environment (the home).

First experiences with autistic children

One of my first experiences working with a child with autism was during high school at an after school program in a Midwestern suburb. Typically it would be myself and a paraprofessional working the late afternoon shift, working with children (Kindergarten through grade 5) before their parents picked them up. The paraprofessional would focus most of her attention on a kindergarten girl who had autism. The after school experience was usually relaxed with a variety of activities for the children to play.

I quickly noticed that the child with autism had very different interactions with her peers, her parents and the paraprofessional. She would repeat the same routine every day, often display challenging behaviors such as screaming and throwing objects and showed no interest in playing with other children. She was not interested in the group games, which were the most popular activity amongst her peers. When her parents arrived for pick up, I noticed many challenging behaviors (my guess, due to a transitional

change), which appeared to be a highly stressful time for the parents. With those differences and challenges, I also noticed the great job her paraprofessional would do to help engage her with her peers and to help the pick up transition go more smoothly.

In addition to paying close attention to the child's behavior, I also noticed the way the paraprofessional would interact with the child. I observed the paraprofessional referencing a picture board with the afternoon routine, she would often sit in close proximity to her, rub her back when engaging in her work, and would draw pictures for her to color in (her preferred activity). As someone who had little knowledge or experience with autism, I considered the paraprofessional as a magician. She truly appeared to have the power to make the impossible happen. Though a magician uses illusion to change our perception of reality, I knew the paraprofessional had training in research based and best practice strategies.

The little girl had positive responses with the paraprofessional and would listen and be attentive. The few exchanges I had with the child often seemed to look through me and not acknowledge me. This fueled my desire to work more effectively with this child. Through observations and conversations with the Para, I was able to have more and more successful interactions with this child. This was the first time that I realized that autism was an area that I would like to learn more about and considered it being a potential career.

My experience that I had in high school with the child with autism prompted me to attend the University of Minnesota Duluth where they offered a Unified Early Childhood Program (where I would become licensed in early childhood education and early childhood special education). Throughout college and after graduation, I worked in

a variety of inclusive classrooms with typically developing children and children who had autism. I have always loved working in the classroom but had heard of a job working with children who have autism in home therapy settings. Autism has always intrigued me and I wanted to utilize the special education aspect of my degree, so I started working at a company that uses Applied Behavioral Therapy (ABA therapy), working with children ages 2-8 who have autism. It was not until this position that I truly had an understanding on how autism impacts the family as a whole.

Applied Behavioral Analysis (ABA) therapy

ABA therapy uses principles from Skinner's research, which states, "A behavior is more likely to occur when it is positively reinforced" (as cited in Lovaas, 1987, p. 3).

ABA therapy uses reinforcement to help motivate and teach children with autism the valuable skills needed to succeed in the classroom and everyday life. My employer also emphasizes the importance of parent involvement. I train parents on how to react to their children and also how to utilize therapy while parenting. When I am training and working with the parents, I often think back to how I felt watching the paraprofessional work her "magic" with the little girl. I remember thinking that I would never be able to get that connection with the child. . For many parents, ABA therapy is a new approach, where the therapists may look like "magicians" from the outside.

This is where my research topic starts to come into focus. As a high school student, I did not think that I could have a relationship with the child who had autism like their paraprofessional did. Although, I wished that I could, I felt lost or even intimidated to start the process of learning how to respond and interact with the child.

My research question is, *in what ways does ABA therapy impact the social interactions between the parents and their child with autism?*

In order to fully understand the research topic one must have an idea of what autism entails. My first experience working with the kindergarten girl with autism showed me how these children react to their environment and the people. Like I stated earlier, I was able to tell differences in her responses and interactions versus her peers. One of the first things that stood out to me was the child's lack of interest in her peers; this is common among many children who have autism. This made me think about how the child engages at home; does she respond well with her parents? What types of activities do they participate in? How does a weekend look at her house? Earlier, I also described how the child reacted during pick up time with her parents, many challenging behaviors that appeared to be highly stressful for the parent. The way the little girl reacted was much different than how a typically developing child would act (on most occasions). Thinking about these responses also helped guide me to ask the question how ABA therapy impacts the family's relationships. The next chapter will go further into researching the characteristics of Autism.

Another way to have a better understanding of my research question is to have knowledge on ABA therapy. Since being employed since 2013, I have become more aware of what this type of therapy entails. ABA therapy is either practiced in the home or some companies facilitate therapy in a center. I will be focusing on in-home therapy, as the family plays a significant role in my research.

Most clients receive 30-40 hours of therapy a week, with up to four different therapists (and the parents). During these sessions, the therapist and child will work on

the child's benchmarks, which are outlined in the child's Individualized Treatment Plan (ITP). The ITP is created by the child's clinical director and supervisor and is based off of a variety of assessments. The parents also play a role in defining benchmarks. Many of the families that I have collaborated with so far have reported issues within social interactions, which will then turn into an ITP goal. Further details describing ABA therapy will be outlined in chapter two. It is also important to understand how the family is involved in ABA therapy.

ABA therapy and the family

One of the main aspects, in my opinion, that sets ABA therapy apart from other intervention strategies is the involvement with the parents. Each week, parents receive training on the child's goals and benchmarks as outlined in their ITP. This training teaches them how to run programs and how to teach their children different skills. The reasoning behind this is that they are the ones who are with their children the most, the ones who will essentially have the most impact on their children's success with this therapy.

Since being a senior therapist I have been able to train many parents and I have seen positive changes within the household. I also noticed some of the challenges that the families have using ABA therapy. A few challenges include opening their homes to therapists, the cost of the program and the need for a caregiver (usually one parent) to be home during therapy hours. Parent training is a time consuming process, which can be tiring when parents are also expected to run the household (work, parent other children, pay the bills, get dinner ready, etc.) Despite these challenges, parent involvement plays a significant role in my research question- *in what ways does ABA therapy impact the*

social interactions between the parents and their child with autism? In order to help answer my research question, I will be relying heavily on interviews with current families in ABA therapy.

Summary of chapter one

Through my beginning experiences working with children who have autism, I have seen the importance of support needed for their success. I have also witnessed some of the challenges that the parents have in regards to having a special needs child. Both experiences helped prompt me in asking my research question, *in what ways does ABA therapy impact the social interactions between the parents and their child with autism?*

The next chapter will dig deeper into ABA therapy, Autism and parent involvement. It will highlight previous research on these topics and will assist in the knowledge of the research topic. The next chapter will also give rationale into why I chose to do more research on how ABA therapy impacts the child's and parent's relationship.

CHAPTER TWO

Review of Literature

Introduction

My past experiences working with children who have autism in the school environment prompted me to start working with these children in their natural environment using ABA therapy. Within this therapy the parents play a large role in the child's success.

The following chapter explores key themes, which will help aid in the understanding of *in what ways does Applied Behavioral Analysis (ABA) therapy impact social interactions between the parents and child with autism?* In order to know how ABA therapy affects social interactions, the reader is introduced to the nature of Autism. Once there is an understanding of Autism and its characteristics, Applied Behavioral Analysis (ABA) will be explored. In discussing ABA therapy, the seminal work by O. Ivar Lovaas is highlighted. Finally, the reader is introduced to past studies regarding family relationships and Autism. Understanding this research will help the reader have a deeper understanding why I have chosen to ask the research question *in what ways does ABA therapy impact the social interactions between the parents and their child with autism?*

Autism

According to the Centers for Disease Control and Prevention (CDC), Autism Spectrum Disorder (ASD) is a developmental disability, which affects social functioning, communication and causes behavioral challenges in those diagnosed. In 2010, 1 in 68 children were diagnosed with ASD (cdc.gov). Janzen and Zenko (2012) explained that

when a child is diagnosed with ASD there are four main categories (social interactions, communication, repetitive behaviors or fixed interests and emotional regulation) that show indicators of impairments (p. 6). Janzen and Zenko stated (2012), “The effects of autism on learning and functioning can range from mild to severe and will depend on the individual’s level of intellectual ability, co-occurring conditions, and experiences” (p. 2). From my experience working as a behavioral therapist, each child is an individual with various needs and strengths. The following sections will describe the four different categories of indicators of autism in detail.

Social interaction impairments. Social impairments are associated with eye contact, facial expressions, body postures and gestures (Dunn-Buron & Wolfberg, 2008, p. 21). Social interactions are necessary in everyday life and connect people to one another. Dunn-Buron & Wolfberg (2008) stated:

At one end of the spectrum of difficulties in relating to people, especially peers, is the aloof child, who actively avoids social interactions; next is the child described as passive, who can tolerate social interaction with encouragements and can initiate social contact, but primarily to achieve access to something he or she wants. The next stage on this continuum is the “active but odd” child, who actively wants to interact with others, although usually adults, but, despite a motivation to socialize, is odd due to a lack of social understanding and range of social abilities (p. 25).

Because of these impairments, children diagnosed with ASD have difficulties making meaningful friendships with peers and family members. Because of the

impairments in social interactions, children with autism usually choose different activities to participate in than typically developing children.

Eversole and colleagues conducted a study that looked at the activities chosen by typically developing children vs. children with autism (Eversole et al., 2015). They used a case-control comparison study to measure involvement in the various play activities amongst 131 children (67 children had autism and 64 were typically developing). The researchers used CAPE, which is an interview questionnaire that monitors the child's involvement in 55 play activities. They found that both groups enjoyed playing computer games and watching TV or movies as the most enjoyed activity. The authors also found that playing games was the 6th chosen activity by typically developing children, but chosen 30th by children with autism (Eversole et al., 2015, p. 15). One hypothesis about this finding is that playing games require a great deal of social interactions, an implication of children diagnosed with autism. The researchers also found that swimming was the 5th most preferred activity amongst the children with autism, but ranked 30th by typically developing children. A hypothesis with this is that swimming is an individualized sport with minimum social interactions, hence why children with autism preferred this activity

Social interactions can include eye contact, requesting, asking and answering questions, joint attention and body language. Past research stated that because of these impairments, many children with autism have difficulty making meaningful relationships. Communication impairments also impact these relationships.

Communication impairments. Like Janzen and Zenko (2008) stated earlier, autism has varying levels of severity. There are many forms of impairments that fall

under the umbrella in the communication category. The most severe is the non-verbal child who may only make sounds and no words. Some children are vocal, but only do so after someone prompts them to say it, also called *echolalia* (Dunn-Buron & Wolfberg, 2008, p. 26). “Echolalia is the act of repeating or echoing words or sentences that others have said,” (Janzen & Zenko, 2012, p. 40).

Other impairments in communication are odd sounding sentences or broken language. Some children with autism may ask the same question repeatedly or repeat the same sentence. Stefanski (2011), a child author who has autism, wrote, “For me, my words get jumbled up when I talk. Sometimes I make goofy noises when I don’t know what to say. Sometimes I repeat myself”(p. 6). Weismer and Kover (2015) explained that, “most children with ASD have difficulties with pragmatic aspects of language related to core deficits in social communication, structural language varies widely”(p. 1). With that said, Weismer and Kover conducted research, which looked at language variation, growth and predictors in preschool children with autism. The researchers investigated 129 children over four different assessments or visits at different ages in the children’s lives. The researchers used a clinician-administered test of comprehension and production to measure language at each assessment or visit. The researchers found that the severity of autism impacted how language developed over a time span from 2 ½ years old to 5 ½ years old. The results also showed that the children who had preverbal skills at the first visit, age 2 ½, attained language skills by age 5 1/2 . This study shows that children who have some preverbal skills are able to learn new language and comprehension skills. The conclusion of the study states that it is possible to predict language growth in children 2

½ years of age with ASD. This study also explains that early intervention may aid in language skills.

Overall, there are a wide variety of language skills that children with autism have and can acquire. There are many different factors that impact a child's communication skills; the severity of autism is one factor that plays a big role (Weismer & Kover, 2015).

Repetitive behaviors or fixed interests impairments. Much like there are different levels of communication, there are also different types of repetitive behaviors and fixed interests. I have seen these differences in my experience working as a behavioral therapist (therapist for children with autism) for the past four years.. Some examples that I have seen while working with children ages 2-8 include; lining up items, squinting eyes, repetitive hand movements, placing items in specific locations, repetitive statements or utterances, smelling or eating inappropriate items, body tics, clicking of the tongue, and rocking back and forth are some of the various behaviors and fixed interests that I have seen. Stefanski (2011) writes about his fixed interests, "Sometimes thoughts get stuck in my head, and I go on and on about a subject that "wows" me, like Australia"(p. 14). Each child will have various repetitive behaviors and/or fixed interests. One way to try to eliminate these "odd" behaviors is to understand *why* the child is partaking in them.

Janzen and Zenko (2012) reported that when children who exhibit these types of behaviors, they are doing so to help relieve anxiety or to help feel more relaxed (p. 104). Children with autism have impairments in social interactions and communication skills, which can lead to an increase in stress or anxiety. Janzen and Zenko also explain when these types of behaviors are most likely to occur, "Repetitive and stereotypic behaviors

occur more frequently and intensely during periods of very high or very low levels of stimulation-when bored, overly excited, frustrated, confused or very tired” (2012, p. 104).

Emotional Regulation Impairments. Impairments in emotional regulation include; “distress over removing objects, difficulty calming when distressed, abrupt shifts in emotional states, and unresponsive to interactions” (Janzen & Zenko, 2012, p. 6, figure 1.2). Because of these emotional impairments, children with autism may show aggressive behaviors due to a lack of communication skills to express their emotions. Dunn-Buron and Wolfberg (2008), explain that children with autism often have difficulties recognizing emotions in others. They may not recognize facial cues or body language associated with emotions. Since they are unable to recognize these emotions in others, they have a hard time expressing their own emotions in an appropriate manner.

Conclusion of Autism. There are four main aspects of impairments of autism. It is important to remember that there is a big umbrella of strengths and difficulties in children on the spectrum. “One of the most intriguing aspects of autism is the range of expression of each of the main characteristics...” (Dunn-Buron & Wolfberg, 2008, p. 25).

Applied Behavioral Therapy (ABA therapy)

Janzen and Zenko (2012) described ABA therapy as follows, “...a research procedure used to study behavior change, or the effects of different applications of the behavioral principles and strategies to teach important skills and/or to change or eliminate inappropriate behavior”(p. 204). Lovaas was one of the first researchers to use this behavioral method, which would be used to teach children with autism new skills (Janzen & Zenko, 2012, p. 204). Some of the ways that ABA teaches new skills include reinforcement and discrete trial training, which will be addressed in the following

chapter. In the previous section, the characteristics of autism were explained and the reader learned that autism is a spectrum with various levels of severity. Because of the vast differences children with autism, there are many different types of therapies, or evidence based practices. ABA therapy is one form, which like all therapies may have pros and cons depending on the learner. This section introduces Dr. Lovaas, how ABA therapy is implemented and the pros and cons of using this type of evidence based practice.

Early studies: Lovaas. Lovaas (1987) described the findings of his first research study surrounding behavioral therapy, including 38 children diagnosed with autism less than 40 months of age (p. 4). All children were assessed prior to the intervention using a variety of assessments (the Bayley Scales of Infant Development, the Stanford-Binet Intelligence Scale, and the Gesell Infant Development Scale). The parents were interviewed about their child's speech, the natural environment, social interactions, sensory issues, play, challenging behaviors and stimulatory behaviors. Video recordings were also used to document the behaviors (Lovaas, 1987, p. 4). The pre-assessments showed that each group was developmentally similar.

Lovaas separated the children into two separate groups; 19 children received 40 hours of one-on-one therapy a week (the experimental group) and the other 19 received only 10 hours of one-on-one therapy per week (the control group 1) from trained therapists and the children's parents for at least 3 years. Each group of children received the same type of therapy, just with varying amounts of hours (Lovaas, 1987, p. 5). Various skills were worked on during the first year in therapy. Some of them included, "reducing self-stimulatory and aggressive behaviors, building compliance to elementary

verbal requests, teaching imitation, establishing the beginnings of appropriate toy play, and promoting the extension of the treatment into the family” (Lovaas, 1987, p. 5).

During the second year expressive skills were taught, abstract language, interactive play with peers and therapy was also conducted in the community in addition to in the home.

The third year focused on teaching emotions, academic skills such as: reading, writing and mathematics, and observational learning (learning through observation of peers)

(Lovaas, 1987, p. 5).

The research shows that after treatment, the experimental group showed significant gains in educational placement (Lovaas, 1987, p. 6). Lovaas found that, “Nine children (47%) who successfully passed through normal first grade at a public school and obtained an average or above average score on IQ tests”(p. 6). He also found that 2 of the 19 children from the experimental group (10%), were placed in autistic classes and had a very low IQ score (Lovaas, 1987, p. 6). The rest of the children in the experimental group (8 children, 42%), passed first grade within aphasia classes and scored a mean IQ in the profoundly retarded range. Overall, the children in the experimental group gained an average of 30 IQ points over the control group 1 (Lovaas, 1987, p. 6). “The number of subjects who scored within the normal range of intellectual functioning increased from 2 to 12, whereas the number of subjects within the moderate-to-severe range of intellectual retardation dropped from 10 to 3,” (Lovaas, 1987, p. 6).

In contrast, control group 1 only had one subject achieve normal functioning, scoring an IQ of 99 (Lovaas, 1987, p. 7). The rest of the students placed as following, “18 subjects were in aphasia classes (mean IQ 70, range 30-101); and 21 subjects (53%) were in classes for the autistic/retarded (mean IQ=40, range =20-73)” (Lovaas, 1987, p. 7).

In summary, Lovaas (1987) found that the experimental group (40 or more hours per week of therapy) made more gains than the control group 1 (10 or less hours per week of therapy). “For example, 47% of the experimental group achieved normal intellectual and educational functioning in contrast to only 2% of the control group subjects”(Lovaas, 1987, p. 7). Lovaas also explained the pros and cons of using behavioral therapy. Lovaas (1987) stated,

On the positive side, behavioral treatment can build complex behaviors, such as language, and can help to suppress pathological behaviors, such as aggression and self-stimulatory behavior. Clients vary widely in the amount of gains obtained but show treatment gains in proportion to the time devoted to treatment. On the negative side, treatment gains have been specific to the particular environment in which the client was treated, substantial relapse has been observed at follow-up, and no client has been reported as recovered (p. 3).

Overall, the severity of the children played a large role in their outcomes. Also, the number of hours of therapy per week is important to note. Lovaas also explained that not only therapists are trained in ABA therapy, the parents were as well.

Implementing applied behavioral analysis (ABA therapy). “...promoting the child’s social and language development, and minimizing behaviors that interfere with the child’s functioning and learning, is the main goals of treatment”(Leblanc, Richardson & McIntosh, 2005, p. 14). This section will show how and who will be promoting appropriate behaviors while minimizing competing behaviors.

Leblanc, Richardson and McIntosh (2005) described how ABA can be implemented, “(ABA) uses a series of trials to shape a desired behavior or response. Skills are broken down to their simplest components and then taught to the children through a positive reinforcement system” (p. 14). This type of therapy relies heavily on data, where the therapist takes data points on each step of the teaching process.

From my experience I have seen the skill of drinking out of a cup broken down and taught in a series of trials/steps. For example, instead of just trying to teach the child to drink out of the cup during the first step, the first step may be picking up the cup then setting it back down without spilling any water. Building off of that step, the child may pick up the cup and bring it to their mouth. Once that step has been mastered, the therapist could then start to teach the child to actually drink out of the cup. During each of these steps I would be taking data on whether or not the child was successful or not. Leblanc, Richardson and McIntosh (2005) also explained that these series of teachings are paired with positive reinforcement. Every time that the child was successful at a step in the teaching sequence, the therapist would reinforce the behavior.

Reinforcement will depend on the child’s likes and interests. Social reinforcement, such as a pat on the back or a hug has been popular during my sessions using ABA. Edibles are another popular reinforcer; a chocolate chip, a small piece of candy or a chip are some reinforcers that I have used in my work with children with autism on correct responses. Buron and Wolfberg (2008) described reinforcement as follows, “any response to an individual’s behavior that maintains or increases the likelihood that they will perform the same behavior again” (p. 374). The series of

teaching a task and then reinforcing the appropriate behavior can also be called discrete trial training (DTT).

Like Lovaas (1987) stated, the more intensive the therapy schedule is (between 30-40 hours per week), the more likely the child will make IQ gains. Leblanc, Richardson and McIntosh (2005) agreed, “A key element of this approach is that services are highly intensive, typically between 30 and 40 hours per week of one-to-one intervention, provided by a highly trained therapist”(p. 14). Through my experience working as a trained therapist, parents also play a role in the child’s treatment. Like the therapist, they conduct sessions where they teach the child through DTT.

Intensive behavioral therapy case study. Leblanc, Richardson and McIntosh (2005) conducted a study, which looked at the effects of intensive behavioral therapy, primarily how it impacts the student’s IQ scores, adaptive functioning and language abilities. They looked at three male participants all under the age of six.

Results of the case study: Participant number one: Receiving 30 hours of therapy per week for 18 months. When trying to administer the IQ test, the subject was unable to complete many of the subtests. Because of this the child was unable to be tested. The child’s adaptive functioning score decreased from an original score of 56 to a score after therapy of 46. He scored *low* in all three aspects of the test: expressive, receptive and written. This child’s daily living skills also dropped from 65 to 46. No improvements were found in this child’s development even with treatment (p. 26).

Participant number two: Receiving 20 hours of therapy per week for 14 months. After administering the IQ test, the child’s score increased from 65 (mild range of mental retardation) to 76 (borderline range of intellectual functioning). The child’s adaptive

functioning (expressive, receptive and written skills) also increased from 56 to 69. His scores also increased significantly in the communication and daily living skills domains. The child made great gains in the socialization domain by making a jump from 66 to 88. Overall, this child made gains in many of the different domains but still falls under the *low* range for his age group (p. 26, 27).

Participant number three: Receiving 25 hours of therapy per week for 21 months. The child scored an IQ score of 96, which is unable to be compared due to the child being too young at the time therapy begun. This participant's score in adaptive functioning jumped from 74 to 89, which places him in the adequate range for expressive, receptive and written sub domains. The child's daily living score also jumped from 76 to 84, placing him in the *moderately low* range. The participants score in socialization decreased from 67 to 54. The child scored in the *adequate* range in gross and fine motor sub domains. The child made large gains in his language ability with scoring an 85, opposed to a 77 when he first was assessed. This child made gains in all of the domains, except for in socialization. The child's cognitive abilities, evaluated by the WPPSI-R, were evaluated to be almost in the average range (pp. 28, 29).

Overview of case study: The gains made by each child varied significantly. Where one child made gains, another regressed. It is also important to note the child's ability prior to intensive therapy. Participant one, who made very few gains, was said to be untreatable prior to treatment. He also fell under the severely autistic range. The other two participants, who made gains in various domains, had more skills before treatment than participant number one. Participant one was also the only one who regressed within adaptive functioning. Treatment also was beneficial for participant two and three

regarding their language abilities. After intensive behavioral therapy, the results varied amongst participants but in summary participant two and three made gains in all domains with the exception of socialization. Participant one may have not made gains due to the severity of autism and being unable to finish testing procedures, so more research may be needed regarding children who have severe autism (Leblanc, McIntosh & Richardson , 2005, p. 30, 31).

Conclusion of ABA therapy. “ABA is a useful and flexible method that can be applied in various ways-both structured situations and informal/incidental situations- to teach a wide variety of skills, including social, communicative, academic and functional skills” (Janzen & Zenko, 2012, p. 204). Reinforcement and discrete trial training both play a role in the teaching of new skills. Highly trained therapists and parents both implement the teaching process and take intensive data. Lovaas (1987) found that the more hours of therapy per week the more gains the child will make. Leblanc, McIntosh & Richardson discovered that some children may benefit from the therapy and raise their IQ scores, where others may regress. They also stated that therapy may be dependent on the severity of the child’s autism.

Parents and Autism

This section explores the parent’s role in ABA therapy and will also look at what it is like to be a parent of a child with autism. Parents are one of the participants in the study, which explains why this section plays a role in the research question *in what ways does ABA therapy impact the social interactions between the parents and their child with autism?*

Stress/family functioning/health-related quality of life: case study. Feetham, Frenn, Johnson and Simpson (2011) conducted a study, which looked at parent stress, support from the family functioning and health-related quality of life in parents of children with autism (p. 232, 233). “This study will help guide the development of appropriate interventions targeted to reduce parental stress, and improve parental physical and mental health outcomes” (Feetham, Frenn, Johnson & Simpson, 2011, p. 233). The researchers described family functioning as a “commitment to support the functions of the family that include: economic, safety, child rearing, caregiving and communication” (Feetham, Frenn, Johnson & Simpson, 2011, p. 233). Parents are often faced with the stress of discovering which treatment style will be best for their child. Prior research explained that there are three main areas of stress for parents of children with autism: (1) parenting an autistic child is more stressful than a typically developing child, (2) the child with autism’s behaviors are stressful, (3) the mothers perceive more stress than fathers (Feetham, Frenn, Johnson & Simpson, 2011, p. 234).

Family functioning was measured using the Family Adaptability and Cohesion Evaluation Scales-3 (FACES-3). Previous studies discovered that single mothers and those who are living in poverty receive the lowest amount of support. The researchers discovered, that the amount of support may depend on socioeconomic status (Feetham, Frenn, Johnson & Simpson, 2011, p. 235).

For the study, the researchers used questionnaires to collect their data from 64 parents. The Parenting Stress Scale was used, which had parents score different questions on a scale of 1-5 (1=not stressful, 5=extremely stressful). Feetham, Frenn, Johnson and Simpson found that the majority of parents fell into “somewhat to moderate” amounts of

parenting stress. The highest amount of stress fell under the personal and family life subscale (2011, p. 240). The researchers used the Feetham Family Functioning Survey (FFFS) to measure family functioning, which as 25 items for the participants to respond to. Both fathers and mothers scored a high discrepancy score on “how much there is now” and “how much there should be” in regards to support. The Rand SF 36-item Health Survey was used to measure physical and mental health. The study found that both males and females scored low on the mental health side, while scoring in the normative range for physical health (Feetham, Frenn, Johnson & Simpson, 2011, p. 240). The results showed that family feel a lack of support, which may impact their mental health and stress (Feetham, Frenn, Johnson & Simpson, 2011, pp. 240-241).

Financial and employment impacts on families: case study. “Families of children with autism spectrum disorder (ASD) endure significant financial and employment burden because of their children’s numerous needed services”(Casey, Kuo, Fussell, Saunders, Schulz & Tilford, 2015, p. 36). The study is a secondary analysis of the 2009-2010 National Survey of Children with Special Health Care Needs. The study found that 52% of the participants of children with autism and intellectual disabilities said they have financial burdens and 51% reported that they needed to stop working to assist in the care of their child (Casey, Kuo, Fussell, Saunders, Schulz & Tilford, 2015, p. 36). Family financial burden was described as out of pocket spending of \$1,000 and/or within the past 12 months financial difficulty.

Family employment burden was described as a parent needing to quit working or cut hours working due to needing to care for their child’s health (Casey, Kuo, Fussell, Saunders, Schulz & Tilford, 2015, p. 39). The researchers also found that 34% of parents

of children with ASD had paid more than \$1,000 annually out of pocket for their child's health needs. They also found 36.8% of the participants reported caregiver burdens (needing to quit or cut back on hours at work). The study concluded by stating that parents of children with ASD and/or an intellectual disability have more negative impacts on the family's finances and employment (Casey, Kuo, Fussell, Saunders, Schulz & Tilford, 2015, p. 41). Parents are one of the main participants in my research topic, and it is important to have an understanding of what stressors there are in their daily life.

Impacts of ASD on the families. Kilmer and Nicholas (2015) conducted a study on the family's needs for additional support due to financial burdens. They also looked at past research and described their findings on how autism impacts the family. "In seeking services, parents typically assume the roles of advocate and coordinator of their child's care, which imposes demands on parents and often relegates them to service access pathways that are strife with confusion, uncertainty, and stress"(Kilmer & Nicholas, 2015, p. 78). In my experiences working as a behavioral therapist, parents often ask for assistance when needing to look into speech services and professional care attendant (PCA's). Kilmer and Nicholas used the National Survey of Children With Special Health Care Needs to compare children with autism ages 3-17. The study found that parents with children who have autism and other health needs were burdened with high financial costs and employment difficulties. Twenty percent of participants reported difficulties in socializing outside the home due to behavioral issues from the child (Kilmer & Nicholas, 2015, p. 79). Kilmer and Nicholas also noted that past research by Bayat, found that parents with children who have autism also show great resilience. "Participants reported their family pulling together and becoming more cohesive, finding meaning in the

hardships they encountered, achieving increased personal strength and ability to be compassionate, and fostering a deeper sense of spirituality”(Kilmer & Nicholas, 2015, p. 80). Again, since parents are a main participant in the study, it is important to note how families cope with the various stressors.

“Understanding the strengths and challenges of individuals and families living with ASD is critically important, as is supporting families with proactive strategies via accessible and evidence-informed person and family-centered care” (Kilmer and Nicholas, 2015, p. 84). ABA therapy may be one way to get the support needed for the child and family, however; like the Kilmer and Nicholas stated, one must know the strengths and challenges of the family and child before considering which type of care or treatment is most important.

ABA and the family. Riley-Hall (2012), an author and parent of two girls with autism, described her experience with using ABA therapy with her child. She explained that her daughter, Caroline (age three), learned quickly and would work for blowing bubbles when she mastered a new word or color or letter. The mother described ABA as one-on-one sessions where concepts are learned through repetition and reinforcement (Riley-Hall, 2012, p. 69). Riley-Hall explained that Caroline did a combination of ABA therapy and other traditional educational methods to teach her daughter. “She did extremely well, and her progress continued to surprise even me. She even mastered using the bathroom that year!”(Riley-Hall, 2012, p. 70). Riley-Hall (2012) described many different treatment methods that she used with her daughters, some of them: floor time, the Son-Rise program, Relationship Development Interaction (RDI), Developmental-relational therapies, but she stated that ABA therapy was the most helpful of them all (p.

106). The author also explained that her daughter did a mixture of ABA therapy, Floor Time and preschool and that a full day of ABA therapy may have been too rigid for her daughter (p. 106).

Through my experience as a behavioral therapist, working in homes, I have worked directly with many parents. ABA in-home therapy includes teaching the parents how to also be the “therapist.” Through my company, this is done by weekly 1-2 hour training sessions with the senior behavioral therapist and each of the parents. Many times this is easy to fit into the weekly schedule, but for some parents this can be difficult to find time with their work schedules. Like stated in the previous section about ABA therapy, 30-40 hours a week is recommended for the child to make the most gains. This means that the family has therapist's going in and out of their home all day long, this can be viewed as a stressful situation - to open up their homes and personal lives to these therapists. This can also be a benefit as it is the added support that some families need, based off of the research from the previous case studies.

Conclusion of autism and the family. Case studies have been conducted and many of them found that families with children who have autism are faced with higher stressors. Some of them include financial burdens and a lack of support to care for the child. Physical and mental health can be impacted as well. However, these added stressors may exist, there are also studies that show that families who have children with autism exhibit high levels of resiliency.

Summary of chapter two

With the increase of children diagnosed with autism it is important to know how the child and family is affected. Social impairments, communication impairments and

repetitive behavior or fixed interests impairments are all associated with autism. Autism is a spectrum disorder with different levels of severity. Each child may exhibit various strengths and weaknesses. Based off of their needs, the best type of intervention is chosen.

ABA therapy is one type of intervention that can be used to help aid in teaching children new skills. Lovaas was one of the first researchers to conduct case studies using ABA. He found that the more hours of ABA delivered weekly (30-40 hours), the more gains the child is likely to make. ABA therapy believes that a behavior is more likely to occur, when that behavior is reinforced (Lovaas, 1987). Discrete trial training (DTT) and reinforcement are used to teach new skills. To teach new skills they are broken down into smaller tasks, once these smaller tasks are mastered they are used as building blocks until the new skill is learned. Parents also play a large role in ABA. Parents are trained to become “therapists” as well. Weekly training sessions occur to help aid parents in learning the teaching techniques. Apart from learning ABA therapy, parents with children who have autism have other stressors as well.

Financial burdens and the lack of family support are two aspects that were found in the case studies. Many times parents need to have out of pocket payments and at least one of the parent’s employment is altered. The lack of family support was reported and many parents wished they had more. Although there may be more stressors in families with children who have autism, families also show a great deal of resiliency. Families also tend to pull together during these difficult times and tend to become closer as a family.

The next chapter explains how my data for my research will be collected and what types of tools will be used to help answer *in what ways does ABA therapy impact the social interactions between the parents and their child with autism?*

CHAPTER THREE

METHODS

Introduction

Chapter two gave explanations of past research, which helped aid in asking the question, *in what ways does ABA therapy impact the social interactions between the parents and their child with autism?* The research described Applied Behavioral Analysis (ABA) as, "... a useful and flexible method that can be applied in various ways- both structured situations and informal/incidental situations- to teach a wide variety of skills, including social, communicative, academic and functional skills," (Janzen & Zenko, 2012, p. 204). A common thread between the past research was that autism is a spectrum, which means children will have varying strengths and weaknesses, that there may be pros and cons in using ABA therapy (depending on the child), and that parents with children who have autism often have more stressors in their lives but also show great resilience (Kilmer & Nicholas, 2015).

Within chapter three the reader will learn where the research will be conducted. They will also learn about the two types of participants, the child and the parents. Lastly, they will learn how the research will be conducted (the methods and paradigm). All three aspects need to be understood in order to help answer *in what ways does ABA therapy impact the social interactions between the parents and their child with autism?*

Setting and Participants

Research will be conducted in the home (the natural environment) of one family who will be involved in the study. This study will start to take place after the completion of consent forms and the approval from the Human Subjects Committee (HSC).

Prior to collecting any data I will need to get the consent from the HSC. The HSC ensures that all participants' identities are secure. I will be filling out the long application form for the HSC, as I am using children under the age of 18. This process will start to take place after my first proposal meeting with my advisors. The HSC meets monthly, with the exception of August, to review applications to start research. Once I get consent from the committee, I will then be able to start my data collection process.

The goal is for this study to start to take place in late November 2016 and it will last for a duration of 2 months. Past records from the child's time in therapy will also be used in the study. It is important for the reader to have a deep understanding of the family involved and where therapy takes place. Chapter two stated that autism is a spectrum, where each child has various strengths and weaknesses, this section will give details on the child's needs and where they are at developmentally.

Family. This home belongs to a dual parent household (a mother and father) and their son. The multi-story, two bedroom home is located in an urban city in the Midwest. The child goes to a local school (1st grade) part time and is in therapy for the duration of time. The child has between 30-35 hours of one-on-one therapy per week. The child's therapy team is made up of a clinical supervisor (8 hours per week), a senior behavioral therapist (7 hours per week) and two behavioral therapists (a total of 20-25 hours per week). The therapy team consists of one male and two females. The mother and father each receive 2 hours of training per week and the mother works an additional 8 hours with her child per week. The mother is the primary caregiver while therapy is in session, while the father works full time. The father will continue to get trained in on the child's therapy and he will also put in an additional 2 hours per week of therapy. Therapy is

conducted throughout the entire house and in the backyard. There are also many parks in the neighborhood where therapy can be conducted.

While at school, the clinical supervisor, senior therapist and behavior therapists work with the child and his teacher for a total of 18-20 hours per week. The child stays in the general education classroom, with an exception of 30-45 minutes per week working with the speech language pathologist. The school district developed his Individualized Education Plan (IEP). There are a number of children in his classroom who are also on IEP's and there are paraprofessionals in and out of the classroom throughout the day.

Child: 6-year-old male enrolled in 1st grade for the majority of the week (with the exception of Wednesday where he stays home for therapy) and ABA therapy the additional time. The child has been in ABA therapy since January 2016. He is considered "higher functioning." He has typical communication skills, which aids in interacting with his parents, teachers, therapists and peers. He is slightly below his age cognitively, but he is able to be in the typically developing classroom for most of the day with little assistance from a paraprofessional. This child interacts with his peers, but some of his limited interests impact social interactions. His gross motor and fine motor skills are age appropriate. This child has some rigid play behaviors, which results in aggression (hitting), mainly towards his mother in the natural environment. The amount of challenging behaviors he displays will be documented throughout the research study. This child is very intellectual and he has a wonderful imagination. He has great dramatic play skills and a contagious laugh. He is generally liked by his peers and he has a loving family to support his growth in therapy.

The *Parents* consist of a mother and father. The mother is the primary caregiver throughout therapy sessions, which means she is in the home the majority of the day. She continues to work outside of the home 2-4 hours a week and this may increase as a professional care assistant starts to work at the house. The mother is trained 2 hours a week with the supervisor, and she is starting to run her own sessions independently. Both parents are able to document their son's sleep schedule, challenging behaviors and bathroom initiations. She is very well informed on ABA therapy and autism. Also, she is currently writing a blog documenting her family's journey through ABA therapy. The father works full time but he is still able to attend the therapy team's weekly meetings and weekly 2-hour parent training sessions. He too, is well informed on the ABA process and he is eager to continue to learn more about his son's programs and how therapy is conducted. Each parent is a major advocate for their son as they are consistent with taking data and implementing therapy procedures in the natural environment.

Conclusion of the settings and participants.

Chapter 2 described that the amount of hours delivered to the child has a direct impact on the gains the child made. According to Lovaas (1987) the more hours the child receives the more gains the child will make. The setting will also play a role in how research will be collected: through observations of therapy sessions and in the natural environment with the parents. It is also important to note the severity of autism the child has. This will be described in further detail in the upcoming section.

Parents and the children are the main participants in this study. Each play a large role in helping to answer the research question *in what ways does ABA therapy impact*

the social interactions between the parents and their child with autism? Because there are two types of participants, there will be different methods in collecting the data.

Methods

To help answer my research question, I will be conducting an action research study measuring the impact of ABA therapy on social interactions and will be using a mixed methods approach to collect the data. Creswell (2014) explains, “Mixed methods involves combining or integration of qualitative and quantitative research and data in a research study” (p. 14). Mixed methods will be used because I have two types of participants, the child and the parent, and using this flexible method will help tailor my data collection to them. Interviews and observations will be used (the use of open ended), which falls under the qualitative method. Data collection on social interactions and challenging behaviors will be used, which is the quantitative method. Research tools will be explained in the following sections.

Within the mixed methods approach, I will use the convergent mixed methods design. “Within this approach, the researcher collects both quantitative and qualitative data, analyzes them separately, and then compares the results to see if the findings confirm or disconfirm each other,” Creswell, 2014, p. 219. Once my data has been collected, I will look over each type of data and draw conclusions which will help answer my research question, *in what ways does ABA therapy impact the social interactions between the parents and their child with autism?*

Research tools

Interviews will be used as the main tool falling under *the qualitative method*. Interviews will be conducted with the parents in order to get their feedback and

viewpoints on how ABA therapy has impacted their relationship with their child. Having an understanding from the parents will be crucial in answering the research question. I will be using open-ended questions, which will be conducted at the parent's' convenience (email, face-to-face or telephone). Questions will include how their child's behavior was prior to therapy, during the beginning sessions of therapy and how the child's behavior changed after almost a year (10 months) of therapy. I will also include how therapy has impacted the family, touching base on any burdens, any highlights, etc. Interviews will only be used with the parents as they would not be appropriate for the children, rather observations will be more beneficial to use for the child.

Observations are the other tool being used which falls under the qualitative methods. Observations will be used on both the child and the parents. My goal is to observe the child at least 4 different times (2 times per month) for an hour in the natural environment (when therapy is not taking place). During these times I will be taking notes on what activities are taking place and gathering data on the amount of social interactions between the child and parents. Social interactions are described as eye contacts, requests and appropriate responses to questions. These are the positive social interactions that I will record. I will also be taking notes and gathering data on any negative social interactions. These can be described as any challenging behaviors. The child's challenging behaviors are described under the setting and participants section of this chapter. Observations will be beneficial in my research because I can see the interactions in the natural environment and hopefully over a variety of activities (parents making dinner, playing games, working on homework, playing outside, etc.). I can then graph and analyze my findings.

Observational notes will be used with my observations. During the observations I will be taking data on social interactions and challenging behaviors. To keep track of the social interactions I will be creating my own data sheet, which will include the time/data, the activity, tally the number of initiations by the child, tally the number of requests and tally the amount of responses to questions. It will be important to include a description of the activity, as some require more interactions than others. For instance, watching a movie will have fewer interactions than playing a board game. To track the challenging behaviors, I will be using an antecedent, behavior, and consequence (ABC) sheet. Each family is already implementing this data collection, so minimal to no training will be needed for this. I will be tracking the challenging behaviors during the observations, and the parents will be documenting them throughout all hours of the day. Challenging behaviors will be documented as they are a form of communication and they impact social interactions.

Data analysis

After the data is collected, I will need to analyze each aspect of the data. Quantitative data will be analyzed and placed on a scatter plot graph to see the amount of challenging behaviors per week. The amount of social interactions will also be tracked on a scatter plot in order to visually highlight my trends. I will then analyze the graphs into a written analysis. After the interviews are conducted I plan on identifying any similarities between the houses.

Summary of chapter three

I will be using a mixed methods approach to answer my research question; *in what ways does ABA therapy impact the social interactions between the parents and their*

child with autism? Interviews and observations will represent the qualitative method.

Interviews will be conducted with the parents and the observations will be in the natural environment with the child, parents and therapists. Data collection will represent the quantitative method. During my observations I will be collecting data on social interactions, specifically the amount of initiations by the child, number of instances of appropriate requests and number of times the child answers questions. I will also be collecting any instances of challenging behaviors using an ABC collection sheet.

Chapter 4 will discuss the findings of my research and will help aid in answering the question *in what ways does ABA therapy impact the social interactions between the parents and their child with autism?*

CHAPTER FOUR

RESULTS

Chapter four will summarize the data and give an in depth analysis of the data to the reader. Data in this chapter will answer the question, “*in what ways does ABA therapy impact the social interactions between the parents and their child with autism?*” In order for the reader to have a complete understanding of the data and analysis, they will need to have a brief knowledge of autism.

Like the Center for Disease Control and Prevention stated in chapter two, “Autism Spectrum Disorder (ASD) is a developmental disability, which affects social functioning, communication and causes behavioral challenges in those diagnosed” (cdc.gov). Within the areas that autism effects, social functioning was the main deficit that was researched, and more focused on the social functioning between the parent and the child with autism. In accordance with having an understating of autism, one must also be aware of applied behavioral analysis therapy (ABA therapy), as this is the independent variable being researched. Chapter two explained the implementation of ABA therapy through a mother’s lens, “The mother described ABA as one-on-one sessions where concepts are learned through repetition and reinforcement (Riley-Hall, 2012, p. 69).” Parents play an important role in ABA therapy, as they are the ones following through with new, learned behaviors and in most cases, teaching them as well. For the purpose of this study, ABA therapy will focus on teaching new social behaviors. Prior to reviewing the data, one must also remember who is a part of the study and which methods were used.

Research was conducted on one family, a mother and father and their six-year-old son. This family started ABA therapy in January 2016, where the child does both therapies in the home and school environment. The child is “higher functioning”, and excels in his cognitive skills. The autism speaks website explains that higher functioning autism is where the child diagnosed has an average IQ that higher or equal to a typical child his or her age. When starting therapy, the child was below his typical peers socially. Both parents have active roles in their son’s therapy, where the mother delivers eight hours of therapy a week and the father six. Each parent also receives two hours of parent training each week from the child’s supervisor and the child receives between thirty-five and forty hours of therapy per week from behavioral therapists. The mixed methods approach was used when researching this family.

The combination of qualitative and quantitative research methods (mixed methods approach) were used to ensure that the question, “*in what ways does ABA therapy impact the social interactions between the parents and their child with autism?*” is answered. An interview was used with the parents, which represents the qualitative aspect of the research. Data collection of challenging behaviors and total number of therapy hours delivered were used, representing the quantitative method. Fuller details on the reasoning behind using a mixed method approach are outlined in chapter three. The following chapter will first show the data collection results, then explain the findings of the interview questions and lastly will make important comparisons of the two research methods, to answer the question, “*in what ways does ABA therapy impact the social interactions between the parents and their child with autism?*”

Quantitative method: data collection

Experimental research was the main design used in the quantitative method, which looks to see if a treatment influences an outcome (Creswell, p. 13). Data was taken to determine how ABA therapy (treatment) influences a child's social interactions (outcome) with their parents. To help aid in answering this, extensive data was taken.

Data collection plays a major role in ABA therapy, and similarly played a major role in this research, as well. Challenging behaviors and total therapy hours were documented. The parents documented the child's challenging behaviors during his waking hours from February 2016 through the end of October 2016. (See Figure 1 for a sample of the data collection page). Challenging behaviors for this child are any instance of the following: hitting, pinching, hugging (any instance where the child grabs an arm or body part and squeezes), throwing any object and head butting. Please note that the child began therapy in early January 2016, where this month was used to train parents how to recognize a challenging behavior, how to follow through with intervention and how to document their data. Data as collected daily, but for this research it was combined into monthly intervals, which shows the frequency of behaviors per month.

Graph A will show that the most challenging behaviors occurred during the first month of therapy, where 165 behaviors occurred. The following month dropped to 130 behaviors, then jumped up to 153 in April. In May, challenging behaviors had a major decrease to 90 per month, and this trend continued on to June with 38 behaviors and July with only 18 challenging behaviors. In August, they jumped to 60, then 34 in September and 15 in October. The data collection period ended in November (almost eleven months into therapy), as the parents reported minimal challenging behaviors occurring throughout the day.

Referencing graph A, the reader will notice that the most challenging behaviors occurred in the first three months of therapy, primarily the first month, February. By the fourth month, the deceleration of challenging behaviors started to occur, until the ninth month with the lowest frequency. It is important to note that during the first five months of therapy, the child was receiving 10-20 hours of therapy per week and jumped to 35-40 hours per week, starting in June. This is important, as chapter two pointed out, that a child's progress might have to do with the intensity (amount of hours) of therapy implemented per week (Leblanc, Richardson and McIntosh, 2005, p.14). During the whole data collection period, the parents received two hours per week of training from the child's supervisors. During the first four months, the mother and father would work with the child an additional 3.75 hours per week. Starting at the fifth month, the mother and father started to work with the child an additional six hours per week, see graph B for the hours delivered per month by the mother and father and the child's behavioral therapists.

Graph C, shows the amount of challenging behaviors per month in comparison to the amount of hours the parents worked with their child. The reader will notice that in the first month, the parents had the fewest hours (27) and the most challenging behaviors (165). While during the last month the parents worked with their child the most hours (58) and had the least amount of challenging behaviors (15). Graph C also shows that during the first four months, the parents worked with their child the lowest hours per month, during this time the amount of challenging behaviors were the highest. Starting in the fifth month (May 25-June 30), the amount of hours the parents delivered started to stay steady between 45 and 58 per month. With this trend in hours, the amount of

challenging behaviors started to decrease drastically. There is one outlier in the data, which is July 28-August 31 (the seventh month of data collection), where the amount of challenging behaviors increased, even with the high amount of parent direct hours. Apart from the month with the outlier data, the basic trend was during the first four months; the parent-delivered hours were fewer while the challenging behaviors were higher. Starting in the fifth month, the parent delivered therapy hours started a steady increase, where the amount of challenging behaviors concededly decreased.

Graphs A, B and C summarize the amount of hours per month the parents worked with their child in a therapy session and the amount of challenging behaviors occurred each month. All show a similar trend that the amount of ABA therapy hours delivered by the parents impacts the amount of challenging behaviors per month. There were fewer challenging behaviors in most of the months where the parents delivered more therapy hours. Another trend can also be seen in graph one: the longer the child was involved in ABA therapy, the fewer challenging behaviors occurred.

The quantitative aspect of this research project showed trends in the amount of challenging behaviors based on the amount of hours delivered per month and the amount of time the child was in therapy (graphs A, B and C). The following section will discuss the findings from the qualitative part of the data collection and make connections between the two types of data (quantitative and qualitative) to answer the question *in what ways does ABA therapy impact the social interactions between the parents and their child with autism?*

Qualitative method: interview

Open-ended interview questions were used in the qualitative data collection process (see figure two for the interview questions). The interview questions will be used to validate the accuracy of the data collected (Creswell, p.18) from the quantitative method (the parents' hours delivered and the amount of challenging behaviors). The interview questions will look at how ABA therapy has personally impacted the parents, their child and the overall relationships in their family by asking questions about social interactions. Parents answered these questions after twelve months of therapy (December 2016).

The following are the parent's responses to the interview questions. The child will be referred to as L in the interview questions.

1. Tell me about your child, prior to therapy. Likes/Interests/ Challenging behaviors/ Social behaviors. Father: L liked to be silly. He was sweet and wonderful. That said, he was also very hard to communicate with. He frequently had repetitive behavior and play that was often self-serving. He was often out of focus and hard to teach or guide.
Mother: When I think of L prior to therapy I remember how difficult it was to parent him. I remember all of the hard and challenging moments we had. I think it's because the hard times were dominant. There were a lot of aggressive behaviors that started when L was around 4. He had difficulty with transitions (aggressive behaviors were present, especially if it was time to leave a preferred place like the park). L has, for as long as I can remember, loved music; singing, playing guitar and drums and dancing. L is active; he was often over-stimulated or deregulated. He was always on the go and was rarely still. Even after a full busy day, we gave him melatonin to help him fall asleep. L has always been interested in others, especially his peers, but didn't know how to effectively communicate and play.
2. Have you noticed any changes in your child's behaviors since the start of therapy? If so, explain. Father: He asks us questions. Says he loves us. Plays much more interactively. He has learned so many things and had so many experiences with the therapists (too many to add here). He is still his wonderful sweet self. Now he is much more focused, can play independently much more often than before. He has advanced in many areas since the start of therapy and everyone we know who knows him notices that. Mother: Many changes! He is calm, relaxed, present, shows empathy, interest, care, consideration, interest, has learned many

- adaptive and appropriate ways of interacting and having his needs met. L has changed so much for the better since starting therapy.
3. What activities do you enjoy to do as a family? Any difficulties with these activities? Father: We like to play games, go on nature walks. Mother: We also like going out to eat, going to new places and events in our community. Much easier to engage in all of these now. Prior to starting therapy there was so much stress with any of these. We would have to chase him around, he wouldn't stay by us or hold our hands, he was over stimulated, wouldn't listen to us or even hear us when we said his name. The year before therapy started we basically stopped doing most of these things because it was too stressful for all of us.
 4. What were your expectations coming into therapy? Have any been met? Mother: I was exhausted, overwhelmed and afraid of my child when we started therapy. That is an awful place to be and I lived in that state most of the time for a year. I hoped that with therapy L would stop being aggressive and that I would learn how to parent L effectively. I also hoped for us to be a family who would play, have fun, travel, enjoy just sitting together and relaxing. I wanted to be able to have a home that felt balanced and peaceful, not explosive and isolating like it was much of the time for the year prior to starting therapy. My expectations were met and our life is better than I ever imagined it would be.
 5. Can you think of any pros or cons using ABA therapy as parents? Mother: For us personally, this has been an extremely beneficial therapeutic process. We have been and continue to be engaged in this entire process which is a huge pro to us. We value collaboration. We feel tremendous support from our team which is another huge pro. ABA therapy is time consuming and I have spent a lot of my time and energy learning new and effective ways of parenting L, but I wouldn't call it a con because that is the nature of ABA therapy. It takes repeated opportunities to teach with a high rate of reinforcement; naturally ABA is a time and energy intensive therapy.
 6. Any for your child? Mother: L is living and experiencing his best possible life and that is the most important thing to us. Again, here I could say that his missing hours at school and other social events due to his therapy are cons, yet at the same time these are very temporary restraints, we are doing ABA therapy so that when he is at school and in the community that he is experiencing things as authentically as he can. L loves playing with his therapists; he wants to be one when he grows up! One thing I take away from that is how much of a great fit this is for him and our family!
 7. How has your child's social interactions changed since therapy, if any? Mother: L notices us, himself and others more. There has been so much growth in his awareness and taking in his environment and responding to it as well. He is more interested in life, asks questions about us, includes us, wants to be with us and

play with us and he is more spontaneous and intentional than ever before. He is participating in gymnastics for the first time ever because he has the attention span to do so as well as the ability to follow the rules, respond to directions and interact appropriately with his peers. He is more confident and comfortable in social settings that require interacting. He makes more eye-contact and answers questions, we can have a conversation with him and he can do this with others too.

Interview analysis and comparisons: prior to therapy

The interview focuses on the parent interactions with their child prior to therapy and twelve months after therapy. This section will focus on the parent's responses prior to therapy and within the first three months.

The first question focuses on what the child's behaviors were like prior to therapy. The father explains that, "he [L, the child] was sweet and wonderful. That said he was also very hard to communicate with" (January, 10th 2017). The mother continues, explaining that he would often show challenging or aggressive behaviors, especially when leaving a preferred location. The responses with interview question one are consistent with what the data showed during the first month of challenging behaviors. During the first month of data collection, there was the most amount of challenging behaviors (165 total). During this time, therapy had just begun and the parents were being trained on procedures and how to follow through with instances of challenging behaviors. Social interactions were lower due to the child showing challenging behaviors opposed to appropriate social interactions. The mother explained this in question one: "L has always been interested in others, especially his peers but didn't know how to effectively communicate and play" (January, 10th 2017).

The family also discussed interests and activities that they enjoyed as a family. The mother and father explain in question seven: "we like to play games, go on nature

walks. We also like going out to eat, going to new places and events in our community” (January, 10th 2017). All of these activities involve some level of sociability where challenging behaviors would interfere negatively. Mom explains that these outings were stressful prior to therapy and that they ultimately started to avoid most of them. Again, the data supports this, as there were the most challenging behaviors during the first three months of therapy (Graph one). During this time, the average amount of hours the parents were working with the child were the lowest. This is likely due to supervisors continuing to train them on therapy programs, strategies and basic ABA implementation.

Prior to starting therapy, the parents had hopes and goals for themselves and their child. In interview question four, the mother “hoped that with therapy, L would stop being aggressive and that I [the mother] would learn how to parent L effectively. I [the mother] also hoped for us to be a family who would play, have fun, travel, enjoy just sitting together and relaxing” (January, 10th 2017). Most of her hopes focused on eliminating her son’s aggression or challenging behaviors, which were very prominent prior to therapy and during the beginning months. The aggression was interfering with the family’s interests and the child’s social interactions, which were discussed in the previous paragraph. To eliminate her son’s aggression or challenging behaviors, therapy focused on compliance building, ignoring the challenging behaviors and reinforcing the appropriate behavior at higher rate. Appropriate behaviors that were reinforced were L answering the parent’s questions, following instructions or any other behavior that promoted positive social interactions (manners, not interrupting, speaking in a contextually correct volume, etc.). After the first three

months of therapy, the amount of challenging behaviors occurring each month started to drastically decrease.

Interview analysis and comparisons: after one year of therapy

Starting the fourth month of therapy, challenging behaviors started a decreasing trend, which will ultimately lead to the parents ceasing data collection due to the low amounts of negative behaviors each month. During these months, the parents' hours working with their child never went lower than forty per month. Also, during this time, their hours started to spike into the fifties. This is likely due to parents being trained on basic ABA therapy procedures and feeling comfortable to conduct a session without a supervisor present. The next interview questions will focus on how their child and family life has been since the start of therapy.

The second question in the interview asks parents if they have noticed any change in their child's behavior since the start of therapy. Again, the parents answered these questions after twelve months of ABA therapy. This question did not focus on social interactions, but both parents answered with examples of how his social interactions evolved. The father explains that, "he [the child] asks us questions. Says he loves us. Plays so much more interactively" (January, 10th 2017). The mother adds on to that with saying, "Many changes! He is calm, relaxed, present, shows empathy, interest, care, consideration, interest, has learned many adaptive and appropriate ways of interacting and having his needs met" (January, 10th 2017). The child has always been his "wonderful, sweet self," but the parents reported more appropriate behaviors, which eliminated the amount of challenging behaviors. To see how these behaviors decreased across the twelve months of therapy, the reader should reference graph two. The interview

also looked into how the child's social interactions have changed since the start of therapy.

The mother discusses how her child not only has better social interactions with the family, but also with his peers and in the community in his gymnastics class. In question seven she explains in more detail by saying, "He [the child] is more interested in life, asks questions about us, includes us, wants to be with us and play with us and he is more spontaneous and intentional than ever before" (January, 10th 2017). She continues, "he [the child] is more confident and comfortable in social settings that require interacting. He makes more eye-contact and answers questions, we can have a conversation with him and he can do this with others too" (January, 10th 2017). Her responses are supported with graph one, as she explains the appropriate social behaviors that the child has opposed to inappropriate behaviors (challenging behaviors or aggression). Her response is also in line with the trend that the more hours the parents worked with the child, the less aggression or challenging behaviors occurred (graph two). Parents were working more hours starting at the end of April, which continued on during the rest of the year. Because of the high amount of hours worked with their child, the fewer challenging behaviors occurred and more desirable social interactions took place.

The interview also gave the parents a chance to explain any pros and cons associated with ABA therapy they experienced during the year. The mother described her experience as the following in question five: "ABA therapy is time consuming and I have spent a lot of my time and energy learning new and effective ways of parenting L [her child], but I wouldn't call it a con because that is the nature of ABA therapy. It takes repeated opportunities to teach with a high rate of reinforcement; naturally ABA is a time

and energy intensive therapy” (January, 10th 2017). The parents’ commitment to therapy shows with their continued work with their child and the increase in hours per month. Graph two shows how their time and energy has been beneficial to their child’s success with more appropriate social interactions by decreasing the amount of challenging behaviors.

Question six asks the parents to describe any pros and cons for their child since using ABA therapy. The mother provides a similar response to her experience with therapy for her son in interview question six. She explains, “again, here I could say that his missing hours at school and other social events due to his therapy are cons, yet at the same time these are very temporary restraints, we are doing ABA therapy so that when he is at school and in the community that he is experiencing things as authentically as he can” (January, 10th 2017). Time and energy are a huge factor for families implementing ABA therapy. The mother explains that although this can be intensive, in the long run it is worth it for her family and that isn’t necessarily a con. The mother’s understanding of this is clear as she and her husband have put in many hours per month working with her child to help eliminate his aggression and to build more appropriate behaviors. She ends the question with stating, “L [her child] is living and experiencing his best possible life and that is the most important thing to us”(January, 10th 2017).

Conclusion of data analysis

Mixed methods research was used to answer the question *in what ways does Applied Behavioral Analysis (ABA) therapy impact social interactions between the parents and child with autism?* The quantitative aspect of data collection included the family documenting the amount of challenging behaviors that occurred each month. Data

was also taken on the amount of hours of therapy the parents worked with their child each month. Qualitative data was taken by asking open-ended interview questions to the parents of the child.

The findings of each showed a consistent trend that the more hours the parents worked with their child using ABA therapy, the fewer challenging behaviors occurred each month. Parents reported in their interview responses that prior to therapy, the child had difficulties knowing how to effectively communicate. They explained that many of their family activities that they enjoyed were hindered due to the amount of aggression and challenging behaviors exhibited by their child. After four months of therapy, the child's challenging behaviors drastically decreased. In connection with this trend, parents reported in the interview that their child is more aware of his environment, made more eye contact, was able to answer their questions, could participate in family activities and would tell them that he loved them (January, 10th 2017).

To answer the question *in what ways does Applied Behavioral Analysis (ABA) therapy impact social interactions between the parents and child with autism*, the data shows that, ABA therapy helps with social interactions by reducing and eliminating challenging behaviors. As a result of this, parents reported that they are able to engage in more family activities together (January, 10th 2017). The data also explained that ABA therapy is time consuming, but for this family worth the time and energy for the outcome. Overall, ABA therapy positively impacted the child's social interactions with his parents by replacing challenging behaviors with more appropriate ones.

Chapter five will review the research study as a whole. It will review the information from the previous chapters, analyze the data and make reference and

meaningful connections to answer the question *in what ways does Applied Behavioral Analysis (ABA) therapy impact social interactions between the parents and child with autism?* The researcher will also reflect on the journey and research process, and will discuss any validity issues and/or implications that occurred. Lastly, the chapter will look into future studies in relation to ABA therapy and social interactions.

CHAPTER FIVE

CONCLUSIONS

Within chapter five, I will reflect on the journey that occurred to answer the question *in what ways does Applied Behavioral Analysis (ABA) therapy impact social interactions between the parents and child with autism?* It will discuss the research process as a whole and review main ideas discovered in comparison with past studies. This chapter will also focus on any future research projects in regards to ABA therapy and/or social interactions.

The research journey

Chapter one discussed my past experiences working with children with autism. These early interactions in my career intrigued me to pursue special education, primarily working with autism, and also resulted in the research conducted in answering the question *in what ways does Applied Behavioral Analysis (ABA) therapy impact social interactions between the parents and child with autism?*

A main aspect in the research process was to find past studies that had connections with my topic, which were outlined in chapter two. There were many studies that focused on ABA therapy and the outcomes, but many didn't focus on social interactions. I also found studies in how having children with autism impacted the family as a whole; however, they did not focus on how ABA therapy impacted the families. This step taught me how to use databases effectively and to find studies that held validity. It also confirmed that I am an observational learner, as reviewing the studies helped me as a

writer format my paper. To me, this was one of the most valuable parts of the process as I will be able to use my new knowledge across a variety of topics I wish to research.

Another major part of the research process was to find my participants. This step proved to be more difficult than expected. Since working for an ABA therapy company for the past four years, I was able to gain consent from the two families I was currently working with. However, midway through my data collection process, one of the families discontinued services unexpectedly. Thankfully, I had two families consent, so I focused my research on one primary family moving forward. The initial shock was discouraging, but I was able to continue on with my study and was taught a valuable lesson that research can be unpredictable and to make compromises within situations.

Data collection played the biggest role in the research. Since I used a mixed methods approach I needed to have two collection tools. The interview, which served as the qualitative method, used open-ended questions and the parents completed this via email. The quantitative aspect was more time consuming and intensive. To be consistent with the therapy that was already taking place in the home, I used the same challenging behavior tracking sheet the parents were use to. For my research, I needed to look back on data from the past year (which was collected weekly in an excel document), and add up the amount of challenging behaviors and hours the parents worked with their child in an ABA session. This data was then turned into graphs and charts, which showed the results of both the challenging behaviors and hours worked with the child. Data collection and the literature review took the most time and planning, but both played a integral part in answering the research question.

Not only did the process help with teaching me how to navigate through online databases and make compromises, most importantly it created a new confidence in my writing skills. The daunting and intimidating feelings of writing a research capstone slowly started to deteriorate the more I wrote. Formatting and APA citations become more comfortable the more I practiced them. Writing quickly become a part of my every day routine, which seemed difficult to accomplish early on, but eventually was second nature. The overall process of my study helped me gain a variety of skills and knowledge, which will help me throughout my career.

Main ideas: past and current studies

Chapter two was an overview of past studies that included autism, ABA therapy and the family. After completing the study and answering the question *in what ways does ABA therapy impact the social interactions between the parents and their child with autism*, there were common threads between the past and current studies.

The first section of chapter two described the characteristics of autism. Dunn-Buron and Wolfberg (2008) explained that there are different classes of deficits relating to social interactions. They explain that one stage of the impairment is, “the “active but odd” child, who actively wants to interact with others, although usually adults, but, despite a motivation to socialize, is odd due to a lack of social understanding and range of social abilities” (p.25). In interview question one, the mother explains what her child’s interactions were like prior to therapy, “L has always been interested in others, especially his peers, but didn’t know how to effectively communicate and play” (January, 10th 2017). This is consistent with what Dunn-Buron and Wolfberg (2008) described as a stage in the social interactions deficits. The mother also described what her child’s

interactions were like after twelve months of therapy in interview question two. She explains, “He is calm, relaxed, present, shows empathy, interest, care, consideration, has learned many adaptive and appropriate ways of interacting and having his needs met” (January, 10th 2017). Another impairment that chapter two explores is language development with children who have autism.

Kover and Weismer (2015), found that children who have some preverbal skills are able to learn new language and comprehension skills. The child who participated in my research had many pre-verbal skills at the beginning of therapy. With that said, the mother explains in interview question seven, how her child’s language skills have emerged since the start of therapy. She states, “He makes more eye contact and answers questions, we can have a conversation with him and he can do this with others too” (January, 10th 2017). Kover and Weismer’s study was congruent with the findings of my study, that if a child has preverbal skills, they are able to continue to grow in their language development. Another researcher who plays a large role in ABA therapy is Lovaas (1987), who conducted a study which looked at how total therapy hours impacted the child’s development.

Dr. Lovaas found that the more intensive therapy is, the more gains the child will make (Lovaas, 1987, p.5). Within my study, graphs A, B and C show that the number of hours the parents worked with their child, the amount of challenging behaviors decreased. Leblanc, Richardson and McIntosh (2005) agreed, “A key element to this approach is that services are highly intensive” (p. 14). Lovaas (1987), also explained some pros that may occur after using ABA therapy. “On the positive side, behavioral treatment can build complex behaviors such as language, and can help suppress pathological behaviors, such

as aggression and self-stimulatory behavior” (Lovaas, 1987, p.3). This finding is consistent with what my data showed, that ABA therapy can decrease aggressive behaviors. The last key comparison between past research and the present is the stress that the family may inherit.

Throughout the interview, the mother recalls what it was like to parent her child prior to therapy. Her hope was that she would be able to learn how to effectively parent her child as she felt “exhausted, overwhelmed and afraid of her child” (January 10th, 2017). Feetham, Freen, Johnson & Simpson explained that families are often faced with what treatment style will work best for them and their child. They also explain that there are different types of stress; parenting a child with autism is more stressful than a typically developing child, the child with autism’s behaviors are stressful and the mother perceive more stress than the fathers (2011, p. 235). Prior to therapy, the mother felt stress due to wanting to find the most appropriate way to parent her child, similar to their findings. On the other end, Kilmer and Nicholas noted research by Bayat, found that parents with children with autism also show great resilience. They explained, “Participants reported their family pulling together and becoming more cohesive, finding meaning in the hardships they encountered, achieving increased personal strength and ability to be compassionate and fostering a deeper sense of spirituality” (Kilmer & Nicholas, 2015, p. 80). In interview question five, the mother reflects on the ABA journey. She explains, “For us personally, this has been an extremely beneficial therapeutic process. We have been and continue to be engaged in this entire process which is a huge pro to us. We value collaboration” (January 10th, 2017). She also explains in interview question five that her expectations were met and that her family’s

lives are better than she could have imagined it to be (January 10th, 2017). This shows how the mother and father were able to be resilient and be a part of the therapy process to better their child and overall lives.

There were many similarities between past studies and what was found in my current study. With that said, there are many different directions that my research could have been. The next section will review any future studies that I would recommend.

Future studies

Because my study was based on one family, there could be benefits on researching social interactions and ABA therapy across a greater variety of participants. The family and child that participated in my research received higher amounts of therapy hours per week. Not only did the child have ABA sessions with his therapists, his parents also put in a higher amount of therapy hours per week. A future study could look into comparing various amounts of therapy hours delivered to the child per week (a range could be from ten to forty therapy hours per week) from both the therapists and the parents.

My research focused on a child who is higher functioning; having an average IQ that is the same or higher than a child his same age (autismspeaks.org). Another study could look into participants with a wide variety of needs (higher and lower functioning children). The child who participated in my study was verbal; studies could also look at how ABA therapy impacts social interactions with children who are non-verbal. Another group of participants could be children with autism with varying ages. This study could dig deeper into ABA therapy and ask questions like, “how does ABA therapy impact

social interactions at various ages?” It could also look into how therapy affects interactions with the use of early intervention strategies.

I feel that my research project opened doors for many future studies, which could unveil many answers into how ABA therapy impacts a child’s social interactions.

Conclusion

After completing the research, it was clear to me that ABA therapy was effective for the family. Not only did the data support this by drastically decreasing the amount of challenging behaviors, the interview was what stood out to me, showing the reader a glimpse into the lives of a family who is using ABA therapy for their child. They discussed their child prior to therapy and after one year, it was a common thread that ABA therapy fit into their lifestyle and they were able to implement the programs. To me, hearing how therapy positively impacted their overall life was rewarding and inspiring.

My goal for this research was to discover what other ways, besides teaching children cognitive skills, does ABA therapy impact the child. Another goal I wanted to find was how therapy impacts the family as a whole. I am happy that I met each of these goals after my study. I can say that ABA therapy has impacted the family and child in many positive ways. By eliminating challenging behaviors, the family feels their child is more engaging, and “is living and experiencing his best possible life” (January 10th, 2017). To me, that should be the goal for all types of therapy, and ABA was able to do so.

REFERENCES

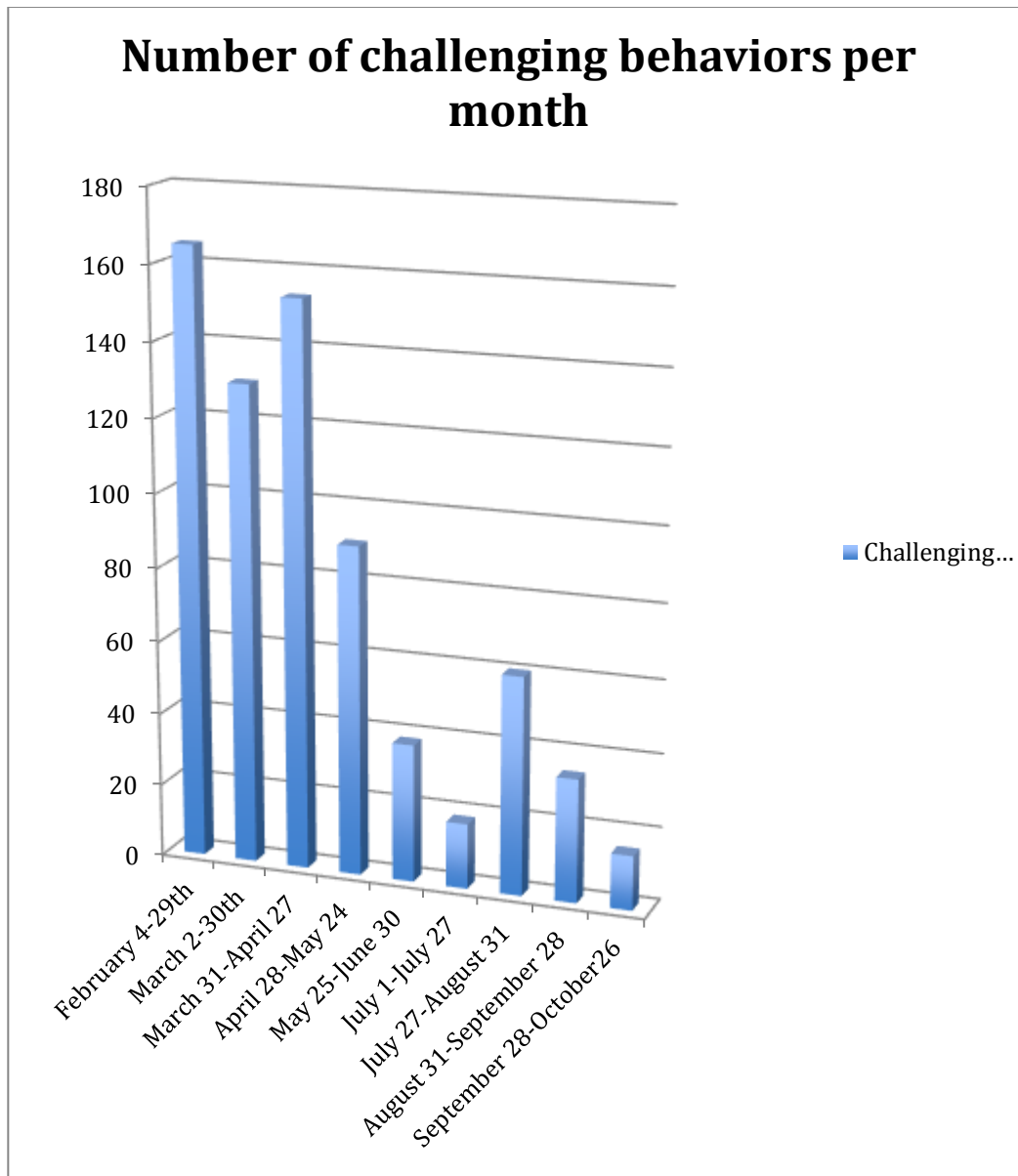
- Anagnostou, E., & Brian, J. (2015). Autism spectrum disorder and the family: Examining impacts and the need for family. In D. Nicholas & C. Kilmer (Eds.), *Clinician's manual on autism spectrum disorder* (pp.77-84). Switzerland: Springer International Publishing.
- Barbera, M. L. (2009). The experiences of “autism mothers” who become behavior analysts: A qualitative study. *The Journal of Speech and Language Pathology – Applied Behavior Analysis*, 4(1), 56-73.
- Bellini, S. (2011). Overview of Social Skills Functioning and Programming. Retrieved from <http://www.autisminternetmodules.org>.
- Bogin, J., Sullivan, L., & Rogers, S. (2011). Discrete trial training (DTT). Retrieved from [http:// www.autisminternetmodules.org](http://www.autisminternetmodules.org).
- Buron, K. D., Wolfberg, P. J., & Gray, C. (2008). *Learners on the autism spectrum: Preparing highly qualified educators*. Shawnee Mission, Kan.: Autism Asperger Pub.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed method approaches*. Thousand Oaks, CA: Sage Publications.
- Eversole, M., Collins, D. M., Karmarkar, A., Colton, L., Quinn, J. P., Karsbaek, R., . . . Hilton, C. L. (2015). Leisure Activity Enjoyment of Children with Autism

- Spectrum Disorders. *J Autism Dev Disord Journal of Autism and Developmental Disorders*, 46(1), 10-20.
- Habarad, S. M. (2015). The power of the mand: Utilizing the mand repertoire to decrease problem behavior. *Behavioral Development Bulletin*, 20(2), 158-162.
- Heitzman-Powell, L. S., Buzhardt, J., Rusinko, L. C., & Miller, T. M. (2013). Formative Evaluation of an ABA Outreach Training Program for Parents of Children With Autism in Remote Areas. *Focus on Autism and Other Developmental Disabilities*, 29(1), 23-38.
- Herbert, M. R., & Weintraub, K. (2012). *The autism revolution: Whole-body strategies for making life all it can be*. New York: Ballantine Books.
- Hillman, J. (2006). Supporting and treating families with children on the autistic spectrum: The unique role of the generalist psychologist. *Psychotherapy: Theory, Research, Practice, Training*, 43(3), 349-358.
- Janzen, J. E. (2003). *Understanding the nature of autism: A guide to the autism spectrum disorders*. San Antonio, TX: Therapy Skill Builders.
- Johnson, N., Frenn, M., Feetham, S., & Simpson, P. (2011). Autism spectrum disorder: Parenting stress, family functioning and health-related quality of life. *Families, Systems, & Health*, 29(3), 232-252.
- Labosh, K., & Miller, L. (2011). *The child with autism at home & in the community: Over 600 must-have tips for making home life and outings easier for everyone*. Arlington, TX: Future Horizons.

- Leblanc, L., Richardson, W., & McIntosh, J. (2005). The use of applied behavioral analysis in teaching children with autism. *International Journal of Special Education*, 20(1), 13-34.
- Lovaas, O. I. (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. *Journal of Consulting and Clinical Psychology*, 55(1), 3-9.
- Riley-Hall, E. (2012). *Parenting girls on the autism spectrum: Overcoming the challenges and celebrating the gifts*. London: Jessica Kingsley.
- Saunders, B. S., Tilford, J. M., Fussell, J. J., Schulz, E. G., Casey, P. H., & Kuo, D. Z. (2015). Financial and employment impact of intellectual disability on families of children with autism. *Families, Systems, & Health*, 33(1), 36-45.
- Stefanski, D., Braun, E., & Mitchell, H. (2011). *How to talk to an autistic kid*. Minneapolis, MN: Free Spirit Pub.
- Szidon, K., & Franzone, E. (2010). Task Analysis: Online Training Module. Retrieved from <http://www.autisminternetmodules.org>.
- Tommey, J., & Tommey, P. (2011). *Autism: A practical guide to improving your child's quality of life*. London: Piatkus.
- Weismer, S. E., & Kover, S. T. (2015). Preschool language variation, growth, and predictors in children on the autism spectrum. *J Child Psychol Psychiatr Journal of Child Psychology and Psychiatry*, 56(12), 1327-1337.

TABLES

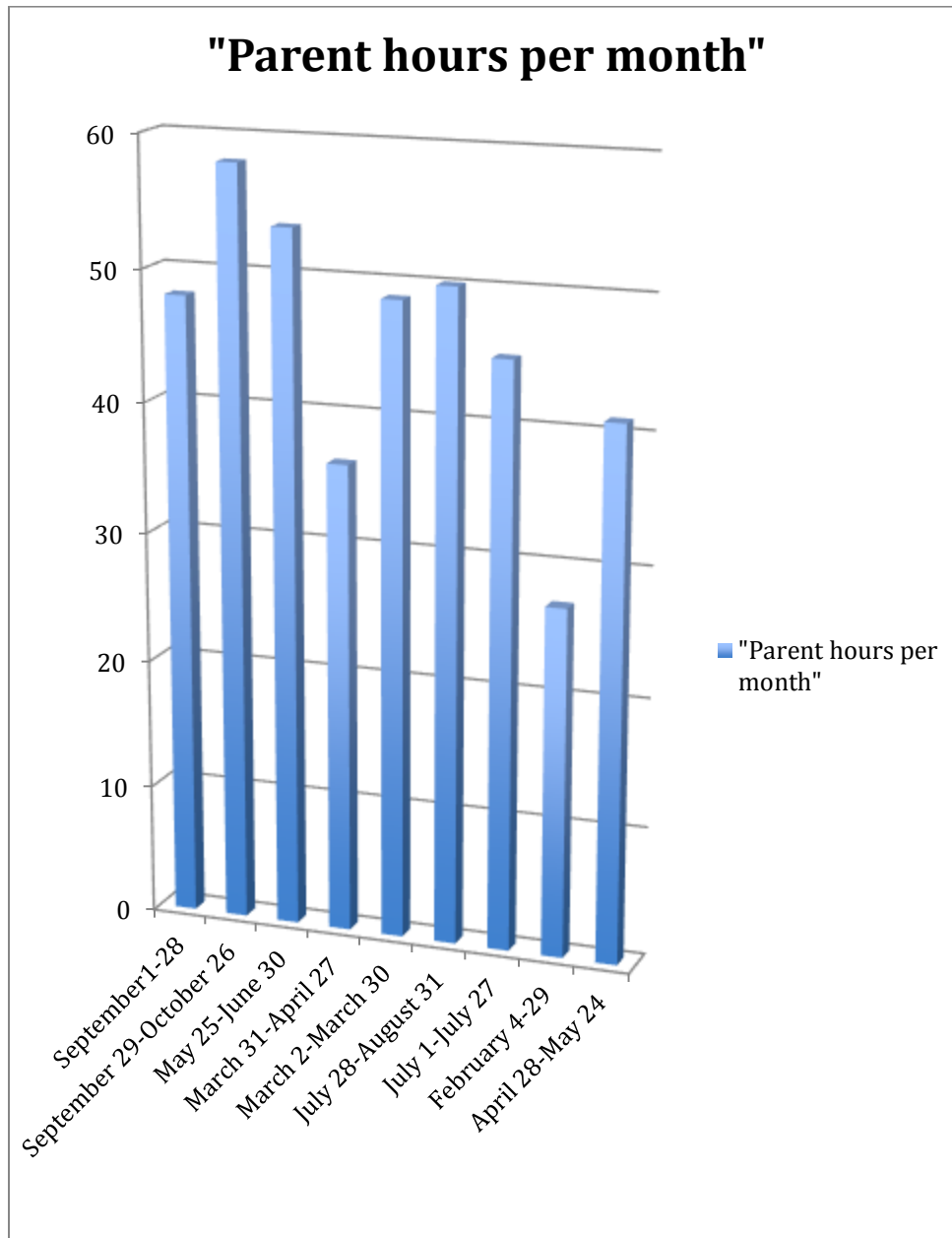
Table A- Challenging Behaviors per Month



February 4-29th	165
March 2-30th	130
March 31-April 27	153
April 28-May 24	90

May 25-June 30	38
July 1-July 27	18
July 27-August 31	60
August 31-September 28	34
September 28-October 26	15

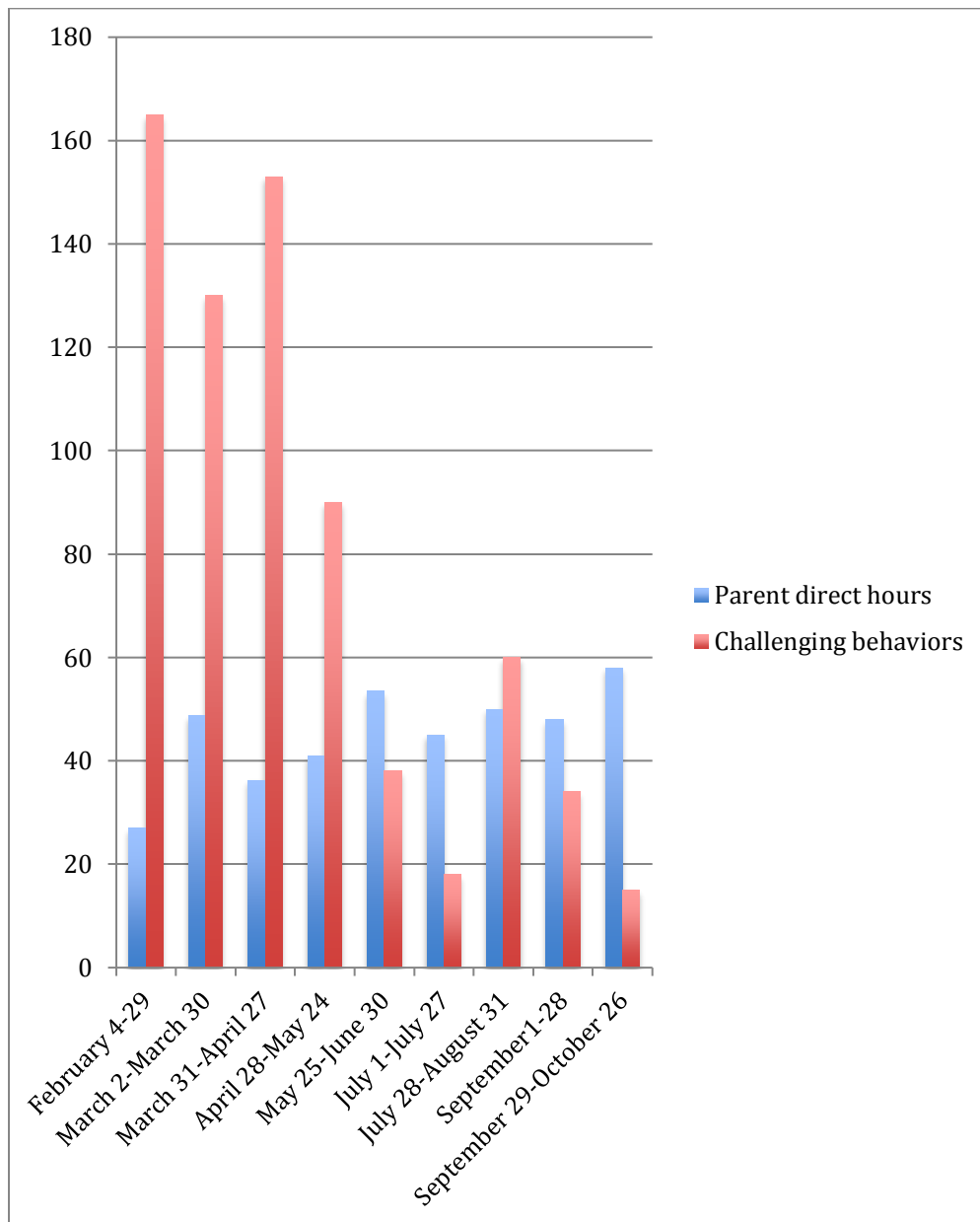
Table B- Parent Hours Delivered per Month



September 1-28	48
September 29-October 26	58
May 25-June 30	53.5

March 31-April 27	36.25
March 2-March 30	48.75
July 28-August 31	50
July 1-July 27	45
February 4-29	27
April 28-May 24	41

Table C- Challenging Behaviors and Parent Hours Delivered per Month



February 4-29	27	165
March 2-March 30	48.75	130
March 31-April 27	36.25	153
April 28-May 24	41	90

May 25-June 30	53.5	38
July 1-July 27	45	18
July 28-August 31	50	60
September 1-28	48	34
September 29-October 26	58	15

FIGURES

Figure 1- Challenging behavior data collection graph

Date/Time	Antecedent	Behavior	Consequence	Notes

Antecedent: What happened right before the challenging behavior?

Behavior: What was the challenging behavior that occurred?

Consequence: What did the parents do?

Figure 2- Interview questions

Interview questions:

Please answer questions ensuring that you use acronyms or pseudonyms to keep you and your family's confidentiality. Feel free to use "L" when talking about your child. Answer the questions you feel comfortable responding to: answer all, some or none.

1. Describe your child: social skills, likes, interests, etc.
2. What types of activities did you and your family do prior to therapy? Do you have a favorite activity that you do with your child/ family?
3. How has therapy impacted the types of activities you do with your family
4. Describe the types of interactions you would have with your son prior to therapy?
5. If you have noticed any changes with your child's behavior/ social interactions- what are they? Can you think back to when they started to occur?
6. How has ABA therapy impacted your family- think socially/ the types of interactions you have with your child?